

Article

General health characteristics of religious Sisters and Brothers. Comparison between samples of non consecrated and consecrated persons

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Simple Summary: A Simple summary goes here.

Abstract: After age, gender and education was statistically controled, clerics compared to representative sample had a higher chance of suffering from chronical health issues such as pain in a small pelvis and obesity. It was also found that clerics had a higher odds of having worst General health. When no variables were controled, clerics had a lower chance of suffering from diabets. Moreover, clerics also had a lower chance of suffering from falling a sleep problems in the last month as compared with sample collected during the second wave of COVID - 19 pandemic (in crude effect). Finally, clerics being night owls had a significantly higher chance of suffering from worst general health when no variables were controled.

Keywords: keyword 1; keyword 2; keyword 3 (list three to ten pertinent keywords specific to the article, yet reasonably common within the subject discipline.).

1. Introduction

Persons who consecrated themselves through their lifelong commitment to God and to a certain religious institute represent a minority group belonging mostly to the Roman Catholic Church [1,2]. This group differs from the major society in more aspects and its way of life arouses many questions [3,4]. To the main specifics of living in a religious institute belong the fundamental role of spirituality [5] and religiosity [6], the hierarchical structured community and subordination to the authority, the binding statutes and daily routine [7,8], gender uniformity and resignation on sexual relationships and family life [9]. Expected is also a high level of social engagement [10] as well as a certain social isolation and/or self-excluding from the mainstream [11,12]. Catholic order members can be regarded as a homogenous population with a number of common characteristics on individual and socioeconomic level [13].

Research on health among consecrated people attracts some attention but the studies are sparse and rather ambiguous. The majority of the existing studies brings positive conclusions. The religious order members might be at lower risk of mental health disorders [14], more successful in achieving physical and mental well-being [15] and able to care systematically for their health [16]. The prevalence of positive emotions was observed among the nuns [17] as well as a higher level of personal happiness [18] and satisfaction at work engagement [19] together with lower tendence to professional burnout [20]. Several studies chose the religious communities as a sample of people living a meaningful and

cognitive stimulating life and came to the results of lower risk of Alzheimer disease or dementia among them [21,22]. It corresponds to the findings about higher ability of consecrated persons to age meaningful [23] and about their longevity [24,25]. On the contrary, there are very few studies pointing at some deficits in health practises of religious order members [26], at the danger of exhausting the spiritual resources through excessive work engagement [10] or at the impact the community conflicts have on the health of individuals [13]. However, the existing results cannot be generalized. There is need of more data from different countries and social-political contexts. Most of the previous research studies were carried out in the USA, some of them in Poland, Germany and Italy. In all these countries, in spite of the advanced secularisation in some of them, the presence and the social engagement of religious institutes have an established tradition and a high level of public credit, which seems to play some role [14]. On the contrary, data from secular post-communist countries are missing as well as data from African, Asian or South American communities. We presume, there are also some other bias to consider, such as a high level of social desirability and non-representative samples because the voluntary questionnaires are rarely completed by all members of the community. The healthier and more active persons are more likely to participate. The current study examines the general health characteristics of religious brothers and sisters in the Czech Republic in comparison to control samples of the Czech population and a sample of consecrated persons from the Slovak Republic. The Czech Republic as the country with the highest percentage (76,4%) of religiously unaffiliated people in the world (Pew Research Center 2014) represents a not very supportive milieu towards the Roman Catholic Church and religious institutes. Slovakia belongs traditionally to the Catholic countries (62% Roman Catholics and 13,4% atheists in the census 2011) and the consecrated persons are more numerous and more appreciated than in the Czech Republic. Nevertheless, the modern history of these two countries is firmly connected and the convents and monasteries in both of them are still carrying the consequences of the long persecution, overworking and forced isolation during the communist regime. Compared to the previous studies, in view of these facts, we suppose a higher level of negative health affecting factors and lower scores of well-being and life satisfaction among the members of the Czech, possibly Slovak religious communities. We also presume some slight differences between the Czechs and Slovaks.

Therefore, the aim of this study is to explore the possible relations between the membership in a convent or monastery religious community in a highly secular post-communist country and both the physical and mental health of the individuals.

2. Methods

2.1. Measures

2.1.1. Health complains

The frequency of recent health complains was assessed by the 12-item measure: headache, stomachache, backache, intestinal problems, feeling depressed, irritability/bad mood, nervousness, trouble falling asleep, dizziness, sore throat/cold, heart pounding/chest pain, tingling in limbs or face. The question was: "In the past month, how often have you had the following issues?" Each item was answered on a five-point scale: never (1), about once or twice (2), approximately once a week (3), more than once a week (4), every day (5). For analytical purposes, participants responses were dichotomised. Answers ranging from 1: "never" up to 3: "approximately once a week" were recoded as "Not many times per week" and answers ranging from 4: "More than once a week" up to 5: "every day" were recoded as "Many times a week".

2.1.2. Long lasting illnessess

For the occurrence of chronic illnesses, a 18-item measure was used introduced by the question: “Do you have a long-term illness or disability? Please tick all that apply to you.” The illnesses are listed in table 3.

2.1.3. General health (GH)

The GH was assessed by composite variable created by summing up number of chronic illnesses. This variable was consequently divided into several categories based on the following approach: having < 1 disease was clasified as “no deseases”, 1 - 2 deseases was clasified as “fiew deseases” 3 - 5 deseases as “several deseases” and more than 6 as “many deseases”.

2.1.4. Chronotype

Daily energy was measured by choosing between two possibilities – an early bird who wakes up early but is tired in the evening, or a night owl who has problem with waking up early but enjoys working in the evening.

2.2. Participants

2.2.1. Sample one

First sample ($n = 1800$, Age: $M = 46.41$, $SD = 17.4$, Females: 51.28%) consisted of participants from Czech nationally representative sample of the study on health, life experience, attitudes and lifestyle collected in 2016 [27]. In this dataset we did not find subjects responding incongruently to the control items i.e. feeling the God presence despite being Non-religious or atheist. Thus, no participant was excluded from a dataset.

2.2.2. Sample two

The second sample was collected in April 2020. It was a survey made in the Czech population during the first Covid 19-lockdown. From the original dataset ($n = 1263$), we excluded 120 participants who responded incongruently to 3 repeatedly asked questions and those, who were speeders i.e. time spend filling questionnaire was < 10 min. The three control questions included age (difference > 2 years), weight and height (difference > 2 kilogram and centimes). Hence, the number of participants was 1143. Based on the results of outliers screening procedure (see statistical analysis section), we also removed subjects, which responded to large number of questions in the same way ($n = 2$). Therefore, the final number of participants was 1141 (Age: $M = 49.2$, $SD = 16.73$, Females: 46.45%).

2.2.3. Sample three

A sample of Catholic order members in the Czech Republic and in the Slovak Republic was recruited to take part in a survey regarding various aspects of today’s consecrated life. The respondents were recruited by contacting the major superiors of all male and female religious institutes in both countries. After six weeks, the information about the survey was sent directly into the local communities in order to increase the number of respondents. The research was done under the auspices of the Conference of Major Religious Superiors of the Czech and Slovak Republic. The superiors were asked to spread an online or a paper-and-pencil questionnaire among the members of their communities and to support its completing. Data was collected from March to May 2021. This sample initially consisted of 497 participants. In the first step, we excluded participants ($n = 4$) who were classified as speeders i.e. finished questionnaire typically lasting more than 30 minutes in < 10 minutes. After this exclusion, 493 participants remained. We also removed participants who filled questionnaire multiple times ($n = 63$) resulting in ($n = 430$) of subjects. This sample consisted of 180 Czech participants and 213 Slovak participants. Other than Czech and Slovak participants were

excluded ($n = 37$) resulting in 393 subjects (Age: $M = 47.52$, $SD = 9.57$, Females: 78.88%). No uniform pattern of responding was detected in this sample. The mean duration of being part of a religious community was 24.45.

2.3. Statistical analysis

As suggested by Shapiro-Wilk test and by histograms, normality assumption was broken in all samples. Thus, non - parametric methods were used. Homogeneity of variances was equal in all samples as indicated by the Breusch-Pagan test. As the null hypotheses of the MCAR test in all our surveys was not rejected, we deleted missing values listwise. Outliers were explored by the Median Absolute Deviation (MAD). Outliers identified by the MED were consequently screened and if there were signs of uniform pattern of responding i.e. answering the number of items in the same manner, than outlier were removed from the dataset.

To explore differences in health status among clerics and non - clerics, we compared in logistic regression models long lasting illnesses of clerics to chronic illnesses of participants from representative sample. In these models, long lasting illness were set as dependent variables. Grouping variable distinguishing clerics from non - clerics was a regressor. Covariates consists of gender, education and age. Ordinal logistic regression was used to compare clerincs and non - clerics in the GH. The same regressin type was applied to explore associations between chronotype and GH in clerics. In the orinal regression models, the following variables were controled: age, education, gender and length of a life in clerical order. Brant test indicated that proportional odds assumption holded for each of the orinal regression models. Variance inflation factor (VIF) used to assess multicollinearity in all regression models. Bonfferoni correction was used to correct p-values in all regression models. When the signficnace was lost after correction, we used the term “trends” to describe relationships after correction. The VIF values < 10 indicates acceptable association between variables [28]. The R [Version 4.0.5; R Core Team [29]] was utilized for all analysis.

3. Results

The table 1 depicts basic socio-demographic characteristics of the study samples.

Table 1. Socio-demographic table

| Characteristic | Sample 1 N = 1,800 | Sample 2 N = 1,141 | Sample 3 (CZ,SK) N = 393 |
|---|-----------------------|-----------------------|-----------------------------|
| Gender | | | |
| Female | 923 (51%) | 530 (50%) | 310 (79%) |
| Male | 877 (49%) | 523 (50%) | 83 (21%) |
| Family_status | | | |
| Not in relationship | 439 (24%) | 267 (25%) | |
| Married | 929 (52%) | 461 (44%) | |
| Divorced | 158 (8.8%) | 201 (19%) | |
| Widow/Widower | 133 (7.4%) | 73 (6.9%) | |
| In relationship | 141 (7.8%) | 51 (4.8%) | |
| Education | | | |
| Basic school | 141 (7.8%) | 90 (8.7%) | 1 (0.3%) |
| Vocational school or non - maturity high school | 442 (25%) | 400 (39%) | 12 (3.1%) |
| High school | 854 (47%) | 377 (36%) | 48 (12%) |
| Higher vocational school or University | 363 (20%) | 169 (16%) | 332 (84%) |
| Economical_status | | | |
| Without work | 261 (14%) | 149 (14%) | |
| Pensioner | 430 (24%) | 325 (31%) | |
| Working | 1,109 (62%) | 559 (54%) | |
| Faith | | | |
| Yes, I am a member of church | 170 (9.4%) | | |
| Yes, but I am not a member of a church | 361 (20%) | | |
| No | 1,004 (56%) | | |
| No, I am convinced atheist | 265 (15%) | | |

3.1. Chronic illness differences

The table 2 presents differences in chronic diseases between clerics and representative sample. It was revealed that there is a significant positive relationship between being a consecrated person and lower probability of diabetes in crude effect. However, there was significant positive relationship between being cleric and obesity in crude and adjusted effect, pain in the small pelvis in both crude and adjusted effect. After Bonferroni correction, no further significant results were found. In the table 3, there can be found prevalence of chronic diseases among study samples.

Table 2. Depicts associations (in Odds ratios) between living in clerical life and chronic diseases (Sample 1 and 3)

| | Pain in the small pelvis | Obesity | Diabetes | Arthritis | Thyroid disease |
|-----------------|----------------------------|------------------------|------------------------|-------------------|---------------------|
| Crude effect | 3.12*** (2.04, 4.72) | 1.75*** (1.25, 2.41) | 0.33*** (0.17, 0.57) | 1.30 (0.84, 1.95) | 1.70** (1.19, 2.40) |
| Adjusted effect | 1.99* (1.16, 3.40) | 1.85** (1.23, 2.78) | 0.46* (0.23, 0.86) | 1.62 (0.94, 2.74) | 1.57* (1.01, 2.45) |
| | Depression/Anxiety | Migraine | Pain of unclear origin | Cancer | |
| Crude effect | 1.79** (1.22, 2.59) | 1.00 (0.70, 1.41) | 0.74 (0.40, 1.27) | 1.34 (0.60, 2.68) | |
| Adjusted effect | 1.58 (0.98, 2.53) | 0.74 (0.49, 1.12) | 0.77 (0.38, 1.46) | 1.69 (0.64, 4.21) | |
| | Hypertension | Ischemic heart disease | Stroke | Back pain | |
| Crude effect | 0.98 (0.73, 1.31) | 0.77 (0.37, 1.45) | 0.79 (0.19, 2.33) | 1.17 (0.92, 1.48) | |
| Adjusted effect | 1.26 (0.89, 1.79) | 1.72 (0.72, 3.85) | 1.91 (0.36, 8.45) | 1.27 (0.95, 1.70) | |
| | Gastric or duodenal ulcers | Chronic lung disease | Skin diseases eczema | Allergy | |
| Crude effect | 1.14 (0.58, 2.08) | 1.56 (0.62, 3.47) | 1.33 (0.90, 1.92) | 1.28 (0.97, 1.67) | |
| Adjusted effect | 1.28 (0.57, 2.74) | 1.51 (0.50, 4.29) | 1.31 (0.82, 2.07) | 1.15 (0.83, 1.60) | |

Note: p < 0.05 *, p < 0.01 **, p < 0.001 ***, Adjusted effect was calculated using the following variables as a covariates: Age, Gender and Education. Values in brackets indicates 95% confidence interval. After Bonferroni correction all results in the first row (except Thyroid disease) and variable arthritis remained significant. Other relationships were non - significant.

Table 3. General health and chronic illnesses among study samples

| Characteristic | Sample 1, N = 1,800 | Sample 2, N = 1,141 | Sample 3, N = 393 |
|----------------------------|---------------------|---------------------|-------------------|
| ICHS | 68 (3.8%) | 47 (4.8%) | 10 (2.9%) |
| Hypertension | 371 (21%) | 243 (25%) | 69 (20%) |
| Stroke | 20 (1.1%) | 20 (2.0%) | 3 (0.9%) |
| Astma | 166 (9.2%) | 94 (9.6%) | 32 (9.4%) |
| Cancer | 36 (2.0%) | 28 (2.9%) | 9 (2.7%) |
| Diabetes | 182 (10%) | 117 (12%) | 12 (3.5%) |
| Obesity | 183 (10%) | 218 (22%) | 56 (17%) |
| Arthritis | 121 (6.7%) | 102 (10%) | 29 (8.6%) |
| Back pain | 631 (35%) | 348 (35%) | 131 (39%) |
| Gastric or duodenal ulcers | 56 (3.1%) | 31 (3.2%) | 12 (3.5%) |
| Chronic lung disease | 24 (1.3%) | 36 (3.7%) | 7 (2.1%) |
| Skin diseases eczema | 156 (8.7%) | 102 (10%) | 38 (11%) |
| Allergy | 364 (20%) | 178 (18%) | 83 (24%) |
| Migraine | 223 (12%) | 94 (9.6%) | 42 (12%) |
| Pain of unclear origin | 99 (5.5%) | 65 (6.6%) | 14 (4.1%) |
| Pain in the small pelvis | 68 (3.8%) | 35 (3.6%) | 37 (11%) |
| Depression/Anxiety | 125 (6.9%) | 102 (10%) | 40 (12%) |
| Thyroid disease | 152 (8.4%) | 110 (11%) | 46 (14%) |
| General_health | 1.69 (1.54) | 2.01 (1.93) | 1.98 (1.71) |

¹ ICHS = Ischemic heart disease, In the General health variable, values refers to M(SD)

3.2. Health complains

Table 4 refers to associations between health complains in clerics as compared to sample 2. Logistic regression indicated significant relationship between clerics and sleep problems: in crude effect, clerics had a lower odds of having trouble falling asleep. No other results were significant.

Table 4. Depicts associations (in Odds ratios) between living in clerical life and health complains in the last month (Sample 2 and 3)

| | Trouble falling asleep | Headache | Stomachache |
|-----------------|------------------------|---------------------|-------------------|
| Crude effect | 0.65* (0.45, 0.92) | 0.87 (0.54, 1.36) | 0.68 (0.33, 1.28) |
| Adjusted effect | 0.84 (0.52, 1.34) | 0.99 (0.53, 1.83) | 0.61 (0.25, 1.43) |
| | Backache | Intestinal problems | Dizziness |
| Crude effect | 0.99 (0.74, 1.31) | 1.31 (0.78, 2.16) | 0.85 (0.41, 1.64) |
| Adjusted effect | 1.00 (0.67, 1.48) | 1.37 (0.67, 2.81) | 1.41 (0.53, 3.60) |

Note: $p < 0.05$ *, $p < 0.01$ **, $p < 0.001$ ***, Adjusted effect was calculated using the following variables as a covariates: Age, Gender and Education. Values in brackets indicates 95% confidence interval.

3.3. General health

Ordinal logistic regression revealed that clerics being night owls had significantly higher chance of lower GH as compared to early birds - in crude effect (OR 1.53; 95% CI (1.02, 2.30); $p=0.039$). In the adjusted effect however, this result was non - significant (OR 1.45; 95% CI (0.96, 2.21); $p=0.078$).

In the next step, we compared clerics with representative sample in the General health. It was found that clerics had significantly higher odds of having lower GH in crude effect (OR 1.36; 95% CI (1.09, 1.69); $p=0.007$). Moreover, in the adjusted effect, the odds of having lower GH slightly increased (OR 1.39; 95% CI (1.07, 1.81); $p=0.013$).

3.4. Chronotype and health complains

In the table 5 there can be found associations between early birds and night owls in health complains in clerical sample. The following trends were found after Bonferroni correction: night owls had higher probability of suffering from problems of falling into sleep and backache as compared to early birds (in both crude and adjusted effect).

Table 5. Depicts associations (in Odds ratios) between early bird and night owls and health complains (Sample 3)

| | Headache | Stomachache | Backache |
|-----------------|---------------------|------------------------|--------------------|
| Crude effect | 0.76 (0.32, 1.70) | 0.70 (0.18, 2.37) | 1.73* (1.05, 2.86) |
| Adjusted effect | 0.72 (0.31, 1.36) | 0.70 (0.18, 2.42) | 1.74* (1.04, 2.92) |
| | Intestinal problems | Trouble falling asleep | Dizziness |
| Crude effect | 1.67 (0.71, 4.02) | 2.55** (1.34, 4.99) | 1.51 (0.45, 5.33) |
| Adjusted effect | 1.61 (0.68, 3.84) | 2.59** (1.35, 5.11) | 1.29 (0.37, 4.42) |

Note: $p < 0.05$ *, $p < 0.01$ **, $p < 0.001$ ***, Adjusted effect was calculated using the following variables as a covariates: Age, Gender, Education and years being in clerical order. Values in brackets indicates 95% confidence interval. After Bonferroni correction all results were non - significant.

3.5. Chronotype and chronic illnesses

Table 6 represents results of logistic regression comparing clerics being a night owls to clerics being early birds. Although after Bonferroni correction all results were non - significant, several trends might be observed: night owls as compared to early birds had higher odds of developing chronic arthritis (adjusted effect) and anxiety/depression (crude and adjusted effect).

Table 6. Depicts associations (in Odds ratios) between early bird and night owls clerics and chronic mental and physical diseases (Sample 3)

| | Gastric or duodenal ulcers | Chronic lung disease | Skin diseases eczema | Allergy | Migraine |
|-----------------|----------------------------|--------------------------|----------------------|-------------------|-------------------|
| Crude effect | 2.23 (0.66, 8.64) | 1.67 (0.36, 8.60) | 1.27 (0.65, 2.52) | 0.93 (0.56, 1.54) | 1.15 (0.60, 2.20) |
| Adjusted effect | 2.03 (0.57, 7.26) | 1.60 (0.35, 7.35) | 1.28 (0.64, 2.55) | 0.94 (0.57, 1.57) | 1.04 (0.53, 2.01) |
| | Depression/Anxiety | Ischemic heart disease | Obesity | Back pain | |
| Crude effect | 2.02* (1.04, 4.03) | 0.82 (0.21, 2.93) | 1.41 (0.79, 2.52) | 1.02 (0.66, 1.59) | |
| Adjusted effect | 2.00* (1.03, 4.01) | 0.54 (0.11, 2.30) | 1.47 (0.81, 2.67) | 1.01 (0.64, 1.60) | |
| | Hypertension | Diabetes | Arthritis | Astma | |
| Crude effect | 1.26 (0.74, 2.15) | 0.88 (0.26, 2.82) | 2.55* (1.17, 5.89) | 1.93 (0.93, 4.14) | |
| Adjusted effect | 1.25 (0.71, 2.18) | 0.94 (0.28, 3.11) | 3.49** (1.43, 9.31) | 1.89 (0.90, 4.08) | |
| | Pain of unclear origin | Pain in the small pelvis | Cancer | Thyroid disease | |
| Crude effect | 0.32 (0.07, 1.06) | 0.64 (0.31, 1.29) | 0.35 (0.05, 1.46) | 1.16 (0.62, 2.17) | |
| Adjusted effect | 0.36 (0.08, 1.21) | 0.63 (0.29, 1.30) | 0.25 (0.04, 1.42) | 1.03 (0.54, 1.95) | |

Note: $p < 0.05$ *, $p < 0.01$ **, $p < 0.001$ ***, Adjusted effect was calculated using the following variables as a covariates: Age, Gender, Education and number of years being part of the clerical order. Values in brackets indicates 95% confidence interval. After Bonferroni correction all results were non - significant. Variable stroke was excluded from analysis, because model containing it did not converge.

4. Discussion

5. Conclusion

6. Patents

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Author Contributions: For research articles with several authors, a short paragraph specifying their individual contributions must be provided. The following statements should be used “X.X. and Y.Y. conceive and designed the experiments; X.X. performed the experiments; X.X. and Y.Y. analyzed the data; W.W. contributed reagents/materials/analysis tools; Y.Y. wrote the paper.” Authorship must be limited to those who have contributed substantially to the work reported.

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Abbreviations

The following abbreviations are used in this manuscript:

| | |
|------|--|
| MDPI | Multidisciplinary Digital Publishing Institute |
| DOAJ | Directory of open access journals |
| TLA | Three letter acronym |
| LD | linear dichroism |
| MSE | Mean Square Error |

Appendix A

Appendix A.1

The appendix is an optional section that can contain details and data supplemental to the main text. For example, explanations of experimental details that would disrupt the flow of the main text, but nonetheless remain crucial to understanding and reproducing the research shown; figures of replicates for experiments of which representative data is shown in the main text can be added here if brief, or as Supplementary data. Mathematical proofs of results not central to the paper can be added as an appendix.

Appendix B

All appendix sections must be cited in the main text. In the appendixes, Figures, Tables, etc. should be labeled starting with 'A', e.g., Figure A1, Figure A2, etc.

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Sample Availability: Data used for the analysis in this study as well as the code are publically available and can be found on the Open Science Network website (<https://osf.io/ad6b3/>).



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